



Booth No. 47 PROVENANCE OF SANDSTONE CLASTS FROM CONGLOMERATE OF THE PALEOCENE-EOCENE ORCA GROUP IN PRINCE WILLIAM SOUND, ALASKA

Thursday, May 16, 2019

09:00 AM - 06:00 PM

Oregon Convention Center - Exhibit Hall B

The Campanian-Maastrichtian Valdez Group of the Chugach terrane and the Paleocene-Eocene Orca Group of the Prince William terrane are adjacent units dominated by turbidites. The relationship between these units is unclear, but sandstone clasts in conglomerates of the Orca Group may provide a link. This study focuses on four significant conglomerate localities in Prince William Sound, Alaska: Miners Bay, Simpson Bay, Galena Bay, and Outpost Island. Detrital zircon from sandstone clasts and matrix were U/Pb dated at the Arizona Laserchron Center by LA-ICPMS for each of the localities. The Miners Bay and Simpson Bay conglomerates are disorganized and dominated by sandstone clasts, and probably occur near the base of the Orca Group because they have maximum depositional ages (MDA) of 60-59 Ma. Two dated clasts in Miners Bay yield MDAs of 60 and 62 Ma with major grain-age populations at 61 and 63 Ma, respectively. Three sandstone clasts in the Simpson Bay conglomerate yield MDAs of 66, 62, and 58 Ma, with major populations at 74, 69, and 61 Ma, and the two older clasts contain greenschist facies minerals. The Galena Bay conglomerate is younger (MDA 55-52 Ma) and it contains sandstone and volcanic clasts. Two similar sandstone clasts have MDAs of 56 Ma, and major populations at 58 and 64 Ma. The youngest unit, the Outpost Island conglomerate (MDA 40 Ma), is a cobble conglomerate with volcanic and sandstone clasts; a sandstone clast has a MDA of 60 Ma and a major age population at 73 Ma. These results show that conglomerates occur throughout the Orca Group stratigraphy. The MDA and grain-age distributions for each clast compare closely to dated bedrock samples of the Orca and Valdez Groups. The majority of clasts can be correlated to the Orca Group with some clasts having the same MDA as the matrix (within uncertainty) suggesting that the conglomerates may record a period of tectonism where faulting exposed strata that were eroded and immediately re-deposited. Two epidote-bearing meta-sandstone clasts from Simpson Bay appear to be derived from rocks of the Valdez Group based on similar grain-age distributions and may be directly linked to exhumation of the adjacent Valdez Group, providing the first definitive provenance link between these two terranes at ~59 Ma.

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